

Open Thesis / Project

Lean Lab 2.0: Leveraging the Internet of Things for Smart Production

Motivation

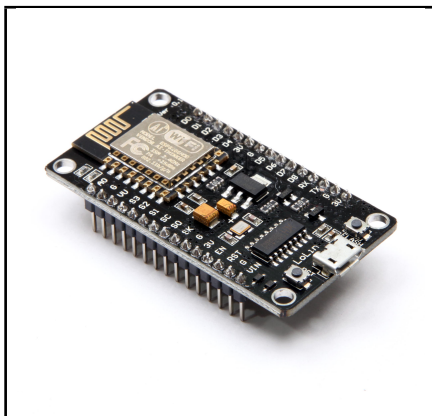
The Lean Lab is located at the Institute of Industrial Management and Innovation Research and is regularly used to teach students of the TU Graz the principles of lean manufacturing. Students can work within an assembly line and optimize the work-flow, the working conditions, as well as the work space. The overall goal is to speed-up production and minimize waste as much as possible.

In a similar context, Internet of Things solutions are increasingly used to build the so called “Industry 4.0”, where wireless sensing technology is used to carry out an enhanced autonomous data acquisition and condition-based maintenance.

Our goal is to extend the Lean Lab with wireless sensors and gather information on the used tools and surrounding environmental conditions (e.g., room temperature, air quality, lighting). This would help in pointing out bottlenecks, and allow quicker improvements.

Thesis Type

Bachelor Thesis / Master Project / Master Thesis.



Target Group

- Students of ICE/Telematics;
- Students of Computer Science;
- Students of Electrical Engineering.

Goals and Tasks

- Extending the Lean Lab infrastructure using wireless sensors
 - Develop a wireless sensing platform to gather ambient information;
 - Extend work tools with wireless sensors;
 - Connect and integrate these to the existing Lean Lab infrastructure.
- Make use of the extended infrastructure
 - Recognize tool usage and activity;
 - Evaluate energy-efficiency of prototypes;
 - Gather data through field tests.

Required Prior Knowledge

- Solid background in computer networks;
- Excellent programming skills (C/C++);
- Problem solving skills and hands-on attitude.

Used Tools & Equipment

- ESP8266, BME280, OPT3001, ...
- Contiki, Arduino, MicroPython

Contact Person

- DI Manuel Weber
manuel.weber@tugraz.at
- DI Mario Kleindienst
mario.kleindienst@tugraz.at

